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Windows Vista to drive growth in slow market

Small supply highlights high-end multimedia features. Makers looking to add HDMI and wireless support.

Taiwan's Shuttle offers the slim X200, which supports 7.1ch HD Audio and a slot-in ODD, 4-in-1 memory card reader and IR receiver.

High price and lower-than-expected demand are slowing the take off of home theater PC (HTPC) industries in mainland China and Taiwan. Although Taiwan had the headstart in terms of R&D and production, companies on the island carry out small-volume manufacturing. Makers do not expect any significant production expansions in the near term.

Mainland China has only five players—Hedy, Hisence, Konka, Changhong Zarva and Tsinghua Tongfang—with low production volumes. Some companies have dropped the line, mainly due to the product's high price. Mainland makers agree that with the low penetration rate of digital TV at 16 percent, the HTPC line, which is hinged on a digital family entertainment setup, will not boom as earlier anticipated. Further, DIY is the current trend for digital home enthusiasts to reduce costs. Taiwan's dominance is also keeping many mainland China makers at bay.

Makers in Taiwan, although presently maintaining low production volumes, are preparing for increased demand. Suppliers are looking to leverage their experience in manufacturing motherboards or barebone systems for the development and production of HTPCs. Makers agree that the rollout of Windows Vista will be a key growth driver for the product line.

The growing adoption of digital family entertainment is also expected to stimulate the market. The availability of high-definition content will boost the market for high-definition devices, particularly HDTV, which could in turn fuel an uptake in the HTPC line.

HTPCs are differentiated from standard PCs for their high-end multimedia features, including HDMI, 7.1ch home theater audio effect and ease-of-use via instant startup and remote control functions. Unlike standard PCs and other consumer electronic devices, HTPCs can deliver a user experience that is familiar to both PC-based and consumer electronics-based markets. In addition to the hybrid consumer electronics/PC user interface, HTPCs are designed for connectivity with a wide range of consumer electronic and computer devices, including home theater systems, portable media players, cameras and external hard drives. HTPCs further provide the option to instantly turn on a media player—a built-in DVD player, for instance—without booting up the entire computer system.

Moreover, HTPCs are different from DVD players, media players and set-top boxes, which some HTPC models may resemble, by highlighting PC components and functionality, such as operating systems.

Some makers in Taiwan have started building in HDMI and wireless capabilities for their models. Many of the currently available products, however, feature DVI connections.

Intel Viiv, AMD Live! platforms compete for space

HTPC platforms are mainly based on Intel Viiv or AMD Live! technology. Launched in January, AMD Live! boasts increased multitasking capacity due to its dual-core technology and enhanced heat dissipation and noise management with Cool'n'Quiet technology. It also features enhanced virus protection, rapid on/off functionality, 7.1ch surround sound, advanced graphics and Microsoft Windows Vista support. HTPCs based on AMD Live! adopt AMD Athlon 64 X2 processors.

The Intel Viiv platform, also launched in January, supports high-definition entertainment, consumer electronics-like features for simplified entertainment and connectivity for online entertainment. It features instant on/off, 7.1ch surround sound, and 1080i and 1080p high-definition video playback. It also delivers improved realism and 3D effects for gaming with Intel Graphics Media Accelerator 3000.

The platform has capacity to support 1Gbps Ethernet. Intel Viiv-based HTPCs adopt dual-core Intel processors, such as the Intel Core 2 Duo, Intel Core Duo, Intel Pentium Processor Extreme Edition and Intel Pentium D.

Most companies featured in this report use Intel Core 2 Duo processors. Micro-Star International Co. Ltd (MSI) uses AMD's Athlon 64 X2 processor for its Media Live HTPC. Shuttle Inc.'s SD365G5M adopts Intel's Pentium D processor.

Home networking, Windows Vista

Gigabyte of Taiwan offers the A963, which adopts Intel’s Mobile on Desktop solution for enhanced thermal and acoustic control.

Taiwan companies such as First International Computer Inc. (FIC) are enhancing the home storage and networking functions of their HTPCs.

According to FIC's vice president, Joseph Kuo, the growing popularity of home networking will boost market demand for HTPCs. The company sees an opportunity in positioning HTPCs as home routers as well.

FIC is targeting its Spectra SP-965 and GE2+ at the home networking space. Both products can support 1Gbps Ethernet and WLAN via Intel Pro/Wireless 3925ABG network connection. Both models support Microsoft Windows Vista Home Premium and are bundled with remote controls.

To support enhanced 3D graphics and high-definition video, the SP-965 uses an Intel Graphics Media Accelerator X3000 engine supported on Intel G965 Express Chipset with ICH8-DH. It is HDMI-enabled.

Many of the HTPCs offered this year are designed to support—or are packaged with—Microsoft Windows Vista OS. However, a growing number of suppliers are customizing the OS for their HTPCs. Linux-based systems also have a loyal market. Some HTPCs provide dual OS options to allow users to run a wide range of applications, including those supported exclusively by one type of OS.

HDMI integration slowly gaining traction

Taiwan's FIC introduced the GE2+, which can support WLAN via Intel Pro/Wireless 3925ABG network connection.

Although most products use DVI connection, more companies are starting to integrate HDMI in their new releases.

Besides the Spectra SP-965 from FIC, the Media Live MS-6421 from MSI features HDMI. The former is designed to look like a DVD, and is referred to by the company as a smart DVD player with networking functionality.

MSI's Media Live MS-6421, which is based on the AMD Live! platform, provides enhanced 3D graphics powered by the NVIDIA GeForce 6150LE and HD Audio supported by Realtek ALC883 chipset. The MS-6421 has a microATX enclosure with an LED on the front panel. It also features a 7-in-1 memory card reader and suction-type optical disk drive.

Found in some high-end HTPCs, HDMI is primarily targeted at consumer electronic devices such as digital TVs, set-top boxes, DVD players and recorders, and game consoles. HDMI Licensing LLC reports that more than 400 companies have qualified for HDMI licenses since the specification was released in December 2002. According to In-Stat, more than 60 million HDMI-enabled devices were shipped last year. The research firm predicts HDMI-enabled device shipments will grow by 78 percent annually through 2010.

DVI connection, meanwhile, is currently adopted by mainstream PCs. In 2005, more than 90 million DVI-enabled products were shipped. Despite this strong adoption, however, DVI is expected to soon exit the line due to the disbanding of the Digital Display Working Group after creating DVI 1.0, leaving no roadmap to improve the standard or increase data rates.

Starting this year, some PC releases will have DisplayPort connections instead. The recently announced DisplayPort standard offers a higher data transfer rate than DVI. It likewise has strong backing from PC vendors such as Dell, HP and Lenovo. It is designed as a replacement for both DVI and analog VGA connectors.

Wireless options, DDR3 support

Shuttle of Taiwan offers the XPC SD365G5M, which comes in a cube-type custom form factor with a mirror-finish front panel that features a VFD.

In addition to the upcoming 802.11n standard, forthcoming HTPC models may support alternative wireless connection standards, such as Ultra-WideBand (UWB) and WirelessHD (WiHD). The next-generation WiHD standard is being developed by an industry-led consortium backed by major manufacturers such as LG, Matsushita, Samsung, Sony and Toshiba.

Some companies enable wireless capability through wireless adapters via USB ports, as well as PCI or PCI Express expansion slots.

FIC embeds Wi-Fi networking modules in its popular export models, including the GE2+. The model adopts Intel's Pro/Wireless ABG connection. It supports indoor ranges and transmission rates of 2m at 54Mbps and 91m at 6Mbps for 802.11a; 90m at 1Mbps and 30m at 54Mbps for 802.11b; and 91m at 1Mbps for 802.11g.

Although the DDR3 specifications have yet to become publicly available, some companies, such as Gigabyte Technology Co. Ltd, are working on integrating DDR3 modules into their HTPCs. The company's current top-selling models adopt DDR2 technology and slim form factors designed in-house. Gigabyte's A963 adopts Intel's Mobile on Desktop (MoDT) solution for small form factor (SFF) PCs. The MoDT solution promises enhanced thermal and acoustic control. The A963 supports a 2.5in SATA 2 HDD, built-in optical disk drive (ODD) and 6-in-1 card reader. Its front panel has three USB ports and a 4-pin FireWire port, as well as microphone and headphone ports. Its rear I/O panel includes two USB 2.0 ports, an RJ-45 LAN port, a 6-pin FireWire port, two PS/2 ports for keyboard and mouse, and DVI, D-Sub, S/PDIF and TV antenna interfaces. It may be modified to support WLAN through its internal Mini PCI expansion slot. The A963 also supports EPG and TV program pause and recording functions.

Shuttle is scheduled to add models with DDR3 memory modules in H2 2007. The company's current bestsellers include the X200 and the XPC SD36G5M. The X200's custom SFF is 5cm thick and has the length and width of an A4 sheet of paper. It supports 7.1ch HD audio and features a slot-in ODD, 4-in-1 memory card reader and IR receiver. It has an Intel Core 2 Duo processor, Intel 945GM Express north bridge chipset and Intel ICH7M south bridge chipset. It can support up to two IGB DDR2 SODIMMs and has a SATA 2 HDD interface.

The X200 supports an Intel 82562 LAN solution with 10BaseT and 100BaseTX Ethernet. It is bundled with a driver CD, DVI to D-Sub connector and stand. Power connectors can be customized. Remote control, power DVD, Nero CD, DVI-to-VGA adapter, DVI splitter cable, wireless LAN module and hybrid A/D TV tuner are optional.

Design trends

More HTPCs are being designed to feature trendy enclosures which will blend well with home furnishings and consumer electronic devices.

Although some makers offer full- or mid-tower HTPCs or adopt microATX or microBTX form factors, an increasing number of manufacturers are developing customized SFF enclosures with streamlined edges and sleek metallic, black or white finishing.

HTPC casings also typically feature front panels with VFD and a selection of I/O ports. The back panel usually provides a wider range of I/O ports, which usually include USB 2.0, FireWire, LAN and A/V ports in various formats.

Makers enable modifications through expansion slots and back-panel perforations. These provisions expedite customization that buyers either request suppliers to implement or conduct on their own.

Shuttle, whose product development team has 100 members, specializes in trendy SFF models with user-friendly features such as instant-on and remote control. The company is positioning its HTPCs as smart media centers.

Shuttle's XPC SD365G5M comes in a cube-type custom form factor with a mirror-finish front panel that features a VFD. Gigabyte and MSI both have product development teams comprising about 40 people. These teams are capable of producing in-house hardware and software designs.

Small production for overseas markets

Although Taiwan makers' production of HTPCs remains limited, supply is targeted at export markets.

Gigabyte, which is among Taiwan's trailblazers in HTPC production, exports 90 percent of its output. Its production capacity for HTPCs is 10,000 units per month.

The company's HTPC production lines are in Taipei, Taiwan and in Ningbo in Zhejiang province in mainland China. Gigabyte's own brand accounts for 40 percent of total output.

Gigabyte's main export market is Europe, which absorbs 60 percent of shipments. The remainder is absorbed by Australia and New Zealand.

FIC exports all its HTPCs under OEM and ODM terms. Its HTPC production line is in Guangdong. FIC's monthly HTPC production capacity is a subset of its monthly PC production capacity, which is 300,000 units. Monthly HTPC output ranges from 5,000 units to 10,000 units. The United States and Europe together absorb 95 percent of shipments.

Shuttle started producing HTPCs, which it refers to as multimedia PCs, in 2004. Its factory is located in Taoyuan, Taiwan, and can produce 30,000 units a month. Its average monthly production of multimedia PCs is 20,000 units.

Shuttle exports about 90 percent of its output. Its export markets comprise Europe, the United States and Southeast Asia, taking up 40 percent, 35 percent and 25 percent of sales, respectively. All of the company's products are sold under its own brand.

MSI began HTPC production in 2006. Its factory is located in Bao'an, Shenzhen in Guangdong. The company exports 90 percent of its products to Europe and the United States.

To reduce import taxes, the company ships barebone systems to some customers who assemble key parts locally. This strategy also helps MSI to reduce its component procurement costs.

Note: All price quotes in this report are in US dollars unless otherwise specified. FOB prices were provided by the companies interviewed only as reference prices at the time of interview and may have changed.

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